easygard100 Light Curtain
32 and 36 elements

Installation and Operation Manual

CEDES AG is certified according to ISO 9001: 2015

English Pages 2 - 15

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Contents

1 Safety information

IMPORTANT READ BEFORE INSTALLATION!

The easygard100 light curtain system was developed and manufactured using state-of-the-art systems and technologies. However, injury and damage to the sensor can still occur.

To ensure safe conditions:

- ► Read all enclosed instructions and information.
- ► Follow the instructions given in this manual carefully.
- ► Observe all warnings included in the documentation and attached to the sensor.
- ► Do not use the sensor if it is damaged in any way.
- ► Keep the instruction manual on site.

The easygard100 light curtain system should only be installed by authorized and fully trained personnel! The installer or system integrator is fully responsible for the safe integration of the sensor. It is the sole responsibility of the planner and/or installer and/or buyer to ensure that this product is used according to all applicable standards, laws and regulations in order to ensure safe operation of the whole application.

Any alterations to the device by the buyer, installer or user may result in unsafe operating conditions. CEDES is not responsible for any liability or warranty claim that results from such manipulation.

Failure to follow instructions given in this manual and/or other documents related to the easygard100 system may cause customer complaints, serious call backs, damage, injury or death.

1.1 Non-intended use

The easygard100 light curtain system must not be used for:

- Protection of dangerous machine such as presses
- Equipment in explosive atmospheres
- Equipment in radioactive environments
- Outside the specified environments

Figure 1: Non-intended use

Use only specific and approved safety devices for such applications, otherwise serious injury or death or damage to property may occur!

1.2 Intended use

The easygard100 light curtain system is intended for automatic doors in elevator applications where it detects persons or objects standing between the elevator doors. All other applications must be approved by CEDES.

WARNING
System integration

The easygard100 light curtain system should only be installed by authorized and fully trained personnel! The installer or system integrator is fully responsible for the correct integration of the sensor. It is the sole responsibility of the planner and/or installer and/or buyer to ensure that this product is used according to all applicable standards, laws and regulations in order to ensure correct operation of the whole application.

2 Symbols, safety messages

2.1 Symbols

Symbol	Meaning
►	Single instruction or measures in no particular order
1. 2. 3.	Sequenced instructions
•	List, in no order of importance
➔	Reference to a chapter, illustration or table within this document
Important	Important information for the correct use of the sensor

2.2 Safety massage category

Warning of serious health risks

WARNING
Serious health risks

Highlights critical information for the safe use of the sensor. Disregarding these warnings can result in serious injury or death.

- ► Follow the measures highlighted by the triangle-shaped arrows
- ► Consult the safety information in Chapter 2 of this manual

Caution of possible health risk

CAUTION
Possible health risks

Highlights critical information for the safe use of the sensor. Disregarding these warnings can result in injury.

- ► Follow the measures highlighted by the triangle-shaped arrows
- ► Consult the safety information in Chapter 2 of this manual

Notice of damage risk

CAUTION
Possible health risks

Disregarding these notices can lead to damage to the sensor, the door controller and/or other devices.

- ► Follow the measures highlighted by the triangle-shaped arrows

3 Introduction

The easygard100 light curtain systems are opto-electronic devices that are used to detect objects or persons in the vicinity of elevator doors.

The easygard100 light curtain system is designed for and can be used in center-opening as well as left or right side-opening elevator applications and is suitable for dynamic as well as static installations.

This document contains the technical specifications of the easygard100 light curtain and the installation procedure.

In general, door protection systems do not provide absolute safety for elevator passengers passing through the doorway. They cannot be used as fail-safe devices of the door mechanism. This safety function must be provided by other means.

3.1 Features of the easygard100

- ► Ideal for both: static and dynamic installations
- ► Suitable for center and side opening
- ► Multiple criss cross beams for a reliable detection
- ► Criss-cross light beams remain fully active untildoors are closed (32 & 36 elements)
- ► Easy installation
- ► Different system types for cost optimization
- ► Optional power converter

3.2 System components

A typical delivery package contains:

Figure 2: Typical easygard100 delivery package (pig tail version)

- 1 × emitter edge (Tx) with fixed cable or pig tail
- 1 × receiver edge (Rx) with fixed cable or pig tail

Depending on the easygard100 model the edges are equipped with

a. a fixed connection cable
b. a pig tail and a connection cable (each xm)

Mounting accessories are also available on request.

3.3 Light curtain system applications

The infrared light curtain easygard100 consists of

- an emitter (Tx) and
- a receiver (Rx) edge,

both of which have a built-in controller. These two active parts are electrically connected directly to the door drive unit of the elevator and mechanically mounted either to the car door wings and/or to the slam post. Contact your nearest CEDES dealer to get more information about the mounting options.

Figure 3 shows the principal of the easygard100 system architecture.

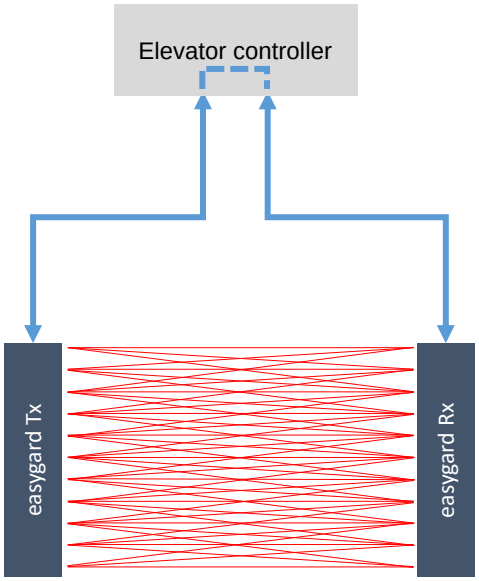


Figure 3: Principal easygard100 system architectures

3.4 General operation

The easygard100 light curtain systems are supplied as a pair with a transmitter (Tx) and receiver (Rx) edge and two connection cables. The edges are built with powder coated aluminum profiles. The transmitter projects an array of infrared light beams to the receiver which consists of a number of photoelectric cells. The beam pattern of the light curtain is schematically displayed in Figure 3. Interruption of one or multiple infrared beams triggers the output to change state. Once the detection field is clear again, the output changes state again to indicate that the area is "clear".

The light beams emitted from the transmitter are sequenced, one after the other, and pulsed at a specific frequency. The receiver is designed to only accept the specific pulse and frequency from its dedicated transmitter. This enables the rejection of ambient light and thus enhances their robustness in various environments.

The number of beams covering the entrance area is dependent on the model in use (see chapter 11.7). Due to the use of criss cross beams, the number of active beams used for the door protection is higher than the number of elements.

Each easygard100 system is equipped with an output which is connected to the elevator control. Depending on model, this output can either be a PNP or a NPN output with a DO (dark on) or LO (light on) logic.

During door closing, when the distance between emitter and receiver edges is decreasing the ±2 angled beams are turned off. Table 1 provides the minimum and maximum number of beams for different easygard100 systems:

No. of optical elements	Min. no. of beams	Max no. of beams
32	94	154
36	106	174

Table 1

3.5 Features

- Ideal for both: static and dynamic installations
- Suitable for center and side opening
- Multiple criss cross beams for a reliable detection
- Criss-cross light beams remain fully active until doors are closed (32 & 36 elements)
- Easy installation
- Different system types for cost optimization
- Optional power converter

4 Installation

4.1 General instructions and precautions

- ► Never scratch or paint the optical windows because they form the light path! Do not drill additional holes into the profile. Unpack the profiles just before installation in order to avoid damage.
- ► Do not bend or twist the edges!
- ► Oil can damage the cables. Contamination must be avoided at all times!
- ► Chemical can damage the profile and optical characteristic. Contact must be avoided at all times!

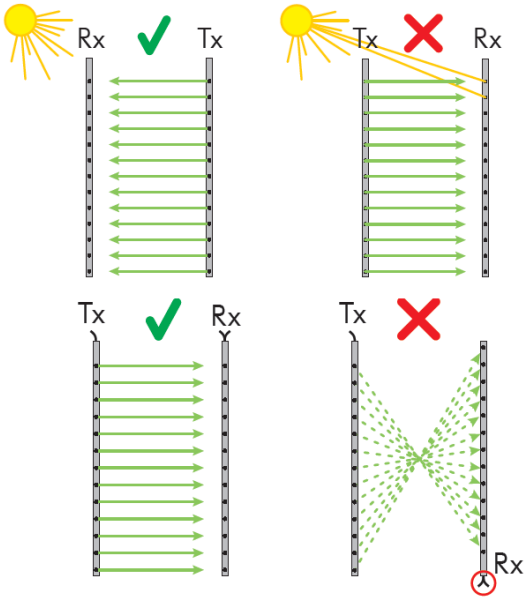


Figure 4: Installation hints

- ► Although the easygard100 system is insensitive to direct sunlight, avoid unnecessary exposure when possible, especially the receiver unit (Figure 4).
- ► Avoid interference from blinking lights or infrared light sources such as photocells or other light curtains.
- ► Do not install the easygard100 system in places where the emitter and receiver edges are directly exposed to light sources such as fluorescent tubes or energy saving lamps.
- ► Make sure to orient the connection plugs for both the emitter and receiver at the same end (Figure 4).
- ► Due to the nature of door system designs, (which as complete systems is not fail safe), in extremely rare conditions doors can close even with an obstacle present. Therefore, there must be, by code, other safety means to prevent passengers from being hurt by the elevator doors. These dangerous situations should and can be detected by the elevator control, which should, in such a case, take the elevator out of service.
- ► The easygard100 system (as well as all other door protection systems on the market) cannot – by its nature – provide absolute safety for elevator passengers passing through the doorway. It must not be used as the final fail safe device of the door mechanism. This ultimate safety function has to be provided by a fail safe force and kinetic energy limiter.

CAUTION
Damage to the eye

Although the easygard100 light curtain does not emit dangerous amounts of infrared light, long exposure to intense infrared light sources can result in damage to the eyes.

- ► Never look directly into the active infrared emitter from a close distance.

4.2 Alignment

The optical axis of the emitter (Tx) and the receiver edge (Rx) need to be aligned towards each other to ensure the light curtain functions reliably.

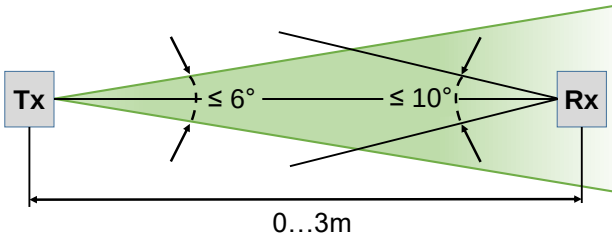


Figure 5: Alignment easygard100

The product labels are oriented towards the lobby area.

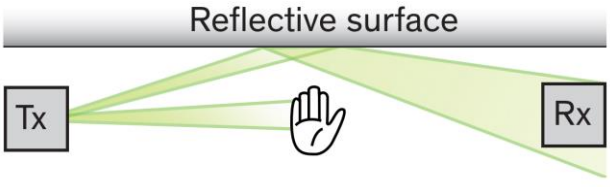


Figure 6: Reflective surfaces

Reflective surfaces near to or parallel to the safeguarded area can cause reflections. Although the easygard100 is very robust against such reflections, it is always advisable to keep a reasonable distance between the sensor edges and any reflective surface.

4.3 Mechanical installation

WARNING
Electrical and mechanical Hazards

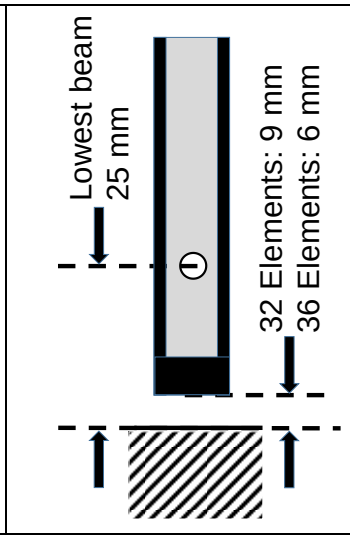
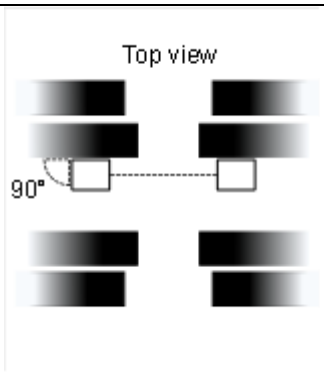
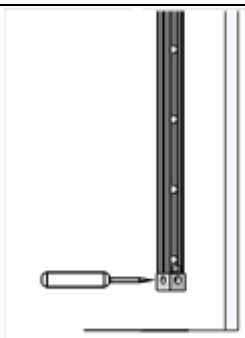
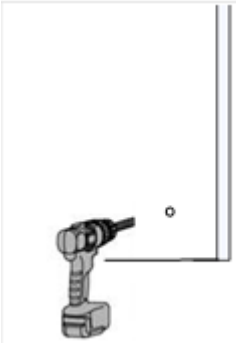
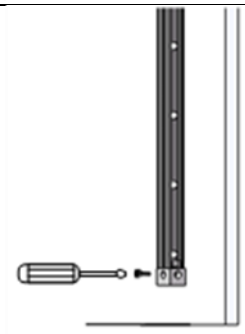
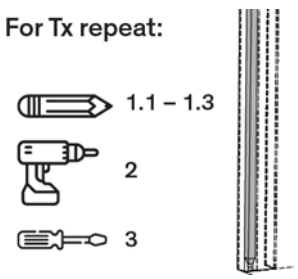
Electrical shock and unexpected movement of the protected application can cause serious injury or death.

- ► Switch off main power to the elevator control system and mark clearly that the elevator is out of service.
- ► Follow all applicable safety measures.
- ► Make sure that your installation complies with all applicable regulations and safety measures..

NOTICE
Mechanical damage to the easygard100 light curtain

- ► Do not drill additional holes into the light curtain.
- ► Do not overtighten the mounting screws.
- ► Mount the edges on a flat surface
- ► Do not bend the edges during transport or during the installation.

Important:

1.1		Receiver and emitter need to mount at the same height and both connectors are on top. EN81-20: Lowest beam should be at 25mm above entrance level.
1.2		Check the alignment of the edges. The receiver needs to be mounted 180° to the emitter. **Important:** Make sure the optical windows are facing each other.
1.3		Mark the mounting holes.
2		Drill the holes for mounting on the marked positions.
3		Mount the edge with the screws (preferred screw size M3) from the side in the drilled holes.
4		

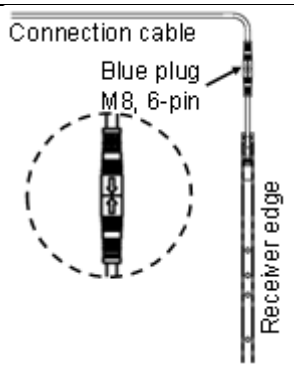
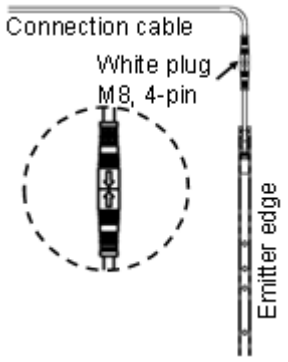
5		Connect the connection cable (blue plug) on the receiver edge (Rx) and guide the cable to the control unit. (6-pin for Push pull and solid state relay output)
6		Connect the connection cable (white plug) on the emitter (Tx) edge and guide the cable to the control unit
7	Make sure the detection area between the edges is not interrupted by door wings, cables, etc. Guide the connection cables using appropriate mounting material, e.g. cable protection tubes, neoprene cable ties or cable guide wires depending on the type of mounting kit used. Improperly fixed and guided cables can reduce cable lifetime drastically	

Table 2: Mounting steps

The easygard100 meets all standards for resistance to electromagnetic interference (EMI). However, it is prudent to guard against interference. Therefore, do not guide easygard100 connection cables close to cables carrying high voltage and/or high current. The easygard100 cables should also be mounted as far away as possible from the door drive motor or motor inverter (VVVF-drives) to avoid EMI problems.

NOTICE

- Ensure that the cable bending radius is greater than 80 mm when cables are mounted.
- If the cables are not properly fixed and guided, their lifetime could be reduced drastically. They can also be damaged due to possible swinging and snagging in the hoist way! Always follow the cable guide instructions carefully, which can be found in the appropriate mounting kit installation and operation manual.
- It is very important to install cables properly to ensure the highest possible reliability and lifespan of the light curtain. A properly installed cable will withstand more than 20 million door movements, while a poorly installed cable could break after less than 100,000 door movements.

4.4 Installation according to EN 81-20

To be compliant to the international standard EN81-20 the light curtain must be installed so that the lowest beam (bottom end) is positioned less than 25 mm above floor (Figure 7).

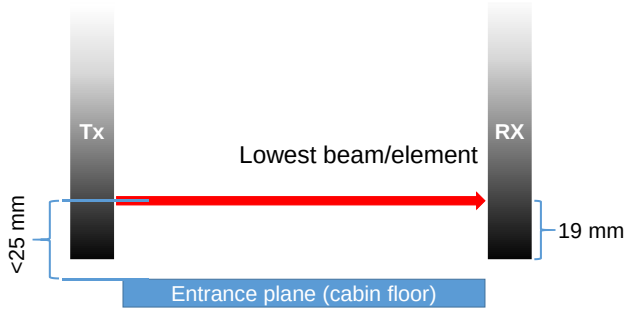


Figure 7: Installation height easygard100 light curtain

Furthermore EN 81-20 requires a detection capability (resolution) of 50 mm starting 25 mm above floor up to a height of 1’600 mm of the door opening.

The resolution of an easygard100 light curtain depends on the number of beams and the beam spacing (distance between element to element). With crisscross beams the resolution close to the edges is larger compared to the center area of the detection field. If the beam spacing is larger than 50 mm, then the easygard100 light curtain edges have to be mounted recessed so that the area with a resolution larger than 50 mm is mechanically blocked by the door wings (dynamic mounting) or by the door posts (static mounting).

The easygard100 products have different resolution depending on element number and detection height (see 11.7). In the chapters 4.4.1 and 4.4.2 the

measures EN81-20 compliant installation for the individual products are explained.

4.4.1 easygard100 SY-2000-36

The easygard100 light curtain with 36 elements achieves a 50 mm resolution even at a distance of minimum „0 mm“ between the two edges. There is no requirement to install the light curtain recessed.

4.4.2 easygard100 SY-2000-32

The easygard100 light curtain system with 32 elements provides only in the middle area of the protective field a resolution smaller than 50 mm. Because of the larger distance between the elements the resolution in the areas close to the edges is larger than 50 mm. Therefore to fulfill the requirement of EN 81-20 the area close to the edges must be mechanically covered.

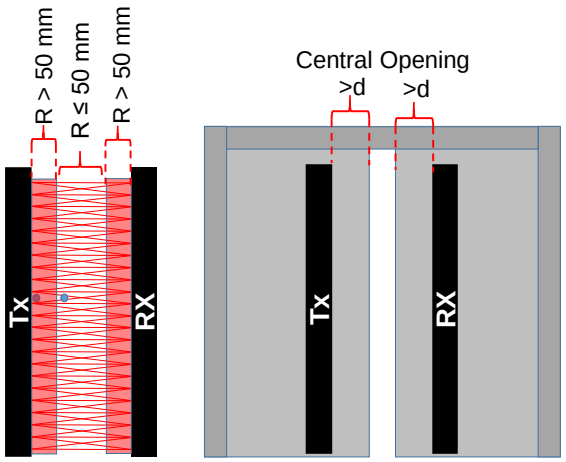


Figure 8: Protective field for EN 81-20 (for easygard 100 light curtain system with 32 elements) and recessed mounting

Figure 8 indicates the center area where the protective field of an easygard100 light curtain system with 32 elements has a resolution of <50 mm. A test object in a size of 50 mm will be detected everywhere in the center area, but not in the side area. Therefore the light curtain system must be mounted recessed.

The minimum recessed distance “d” from the front window to the front door opening or to the front edge of the door for different applications is shown in Figure 9. Only the recessed mounting will lead to a detection capability of 50 mm. The distance “min. d” for the recessed mounting depends on the distance between the emitter (Tx) and receiver (Rx) edges. Corresponding values are provided in Figure 10.

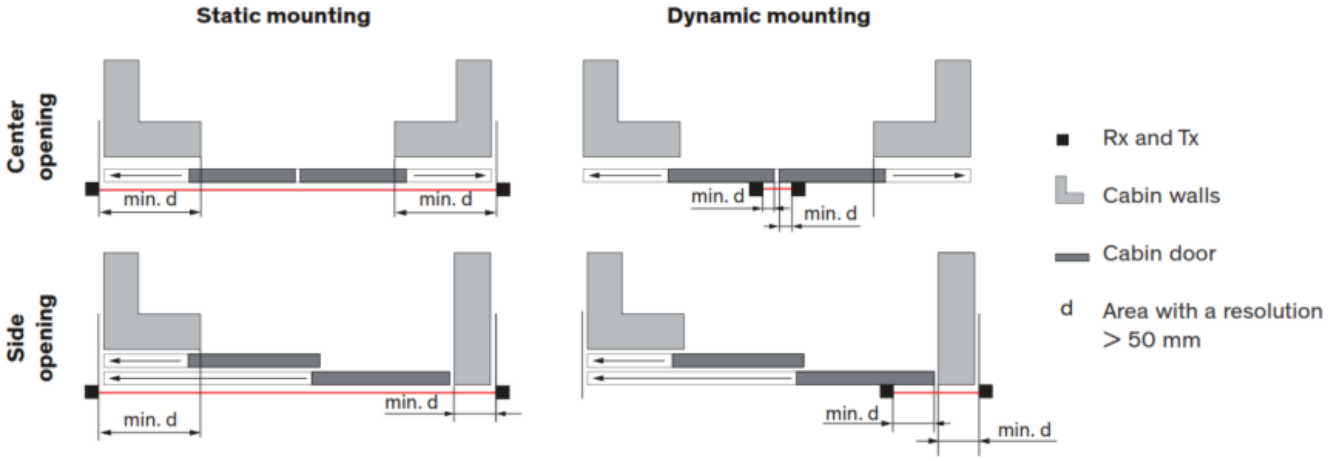


Figure 9: Description of the minimum distance (min. d) required for the easygard100 SY-2000-32

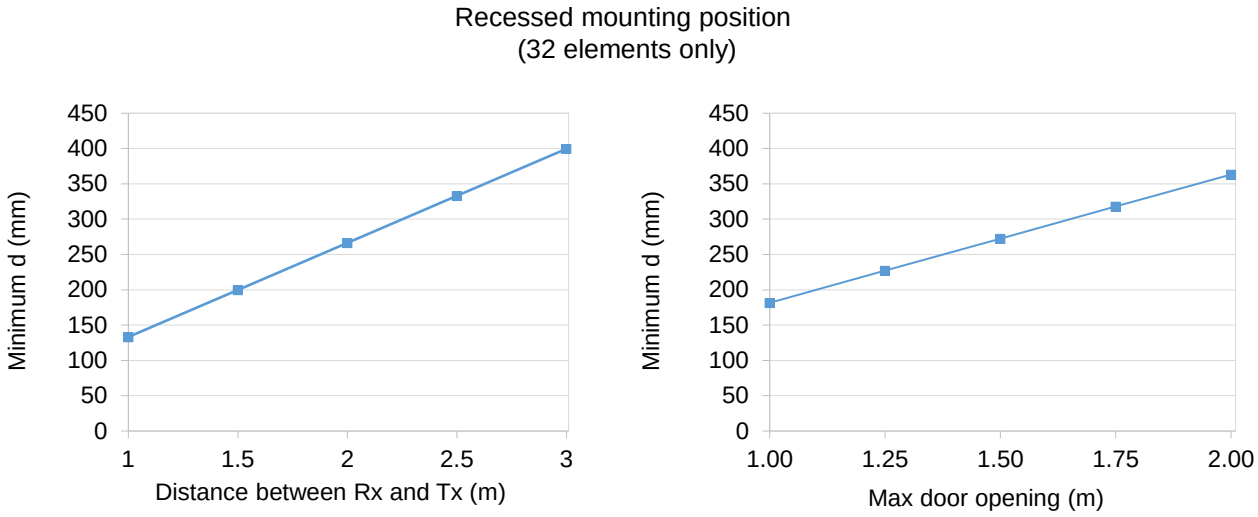


Figure 10: Recessed mounting position easygard100 SY-2000-32 according to EN 81-20

Installation example:
The full width of the elevator door opening is 1.0 m. Each edge has to be mounted recessed min. d= 182 mm.

5 Electrical installation

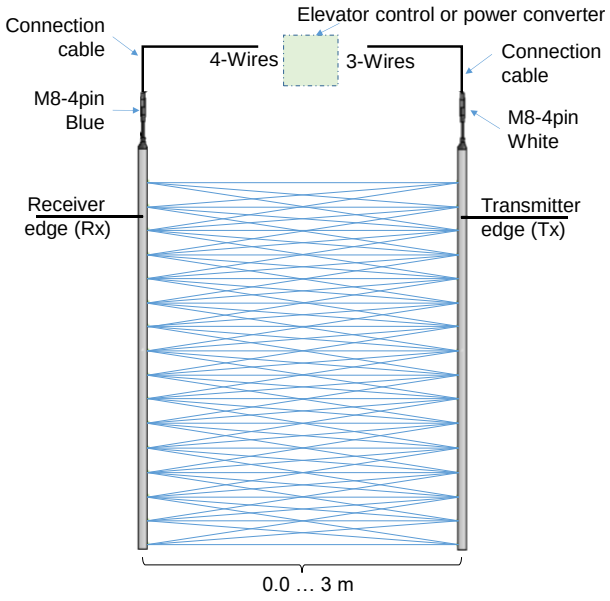


Figure 11: Overview easygard100 light curtain connection (NPN and PNP output)

Important:

- For the connection of the transmitter (Tx): the black wire is not used.
- Any unconnected (not used) wire must be separated and isolated.
- The white wire (Sync) of the Rx must be connected to the white wire (Sync) of the Tx.
- The maximum cable length which shall not exceeded is provided in Table 18.
- The connection cables should not be guided close to high voltage and/or current wires.
- The connection cables should not be close to the door motor and/or door drive.

5.1 Connection to an elevator controller

The easygard100 light curtain can be directly connected to an elevator control. Different output variants are available for different types of elevator controllers:

Output type	Fix logic	Logic selectable
PNP	X	
NPN	X	
Push pull		X
Solid state relay		X

Table 3: Available output types

The standard connection cables already have a plug on the white wires for a convenient connection of the synchronization line.

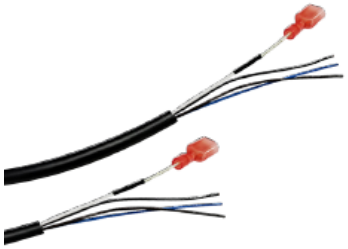


Figure 12: Connection cable ends

5.1.1 PNP or NPN output

For the PNP and NPN output type the output logic (DO= dark ON or LO= light ON) is defined by the easygard100 model (see also chapter 10). Both output variants (PNP and NPN) are available with NO (normally open) or with NC (normally closed) logic.

The schematic connection diagram for each variant as well as the output logic is provided in the figures. Figure 13 to Figure 15.

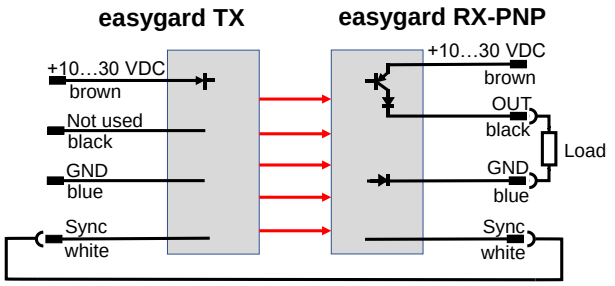


Figure 13: Schematic output diagram (PNP)

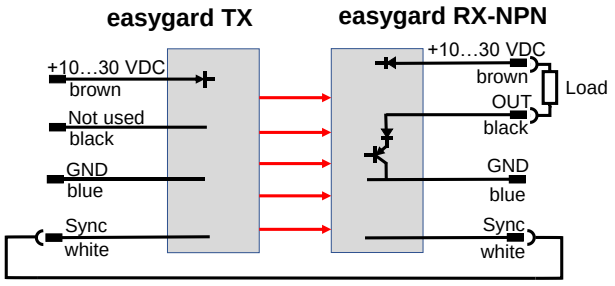


Figure 14: Schematic output diagram (NPN)

When an object enters the safeguarded area (OBJECT DETECTED) the easygard100 light curtain output changes state after response time t2 (see Figure 15). When the object leaves the safeguarded area (NO OBJECT) the easygard100 light curtain output switches back after release time t3 (see Figure 15).

Figure 15 shows the timing diagram of the easygard100 output.

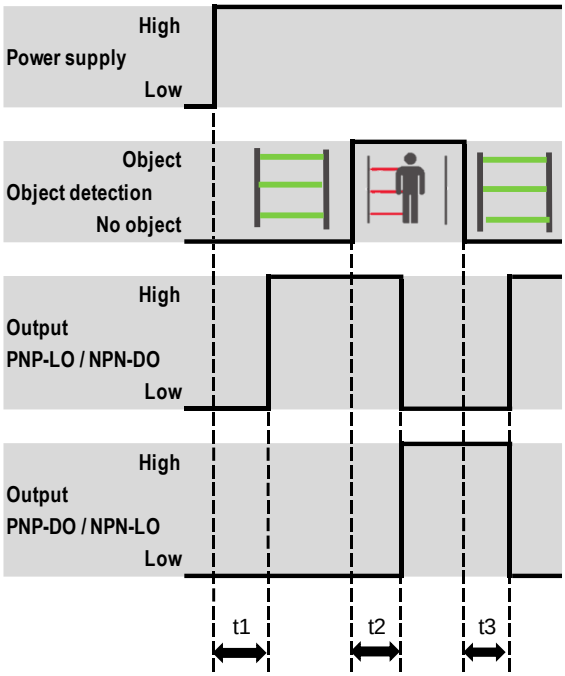


Figure 15: Output logic and timing

	time	Value [ms]
Power Up time	t1	See Table 17
Response time	t2	
Release time	t3	

Table 4: Descriptions for the timings in Figure 15

There is no difference in the values of the times for easygard100 light curtain products with PNP or NPN output or a DO or LO logic.

5.1.2 Push pull output

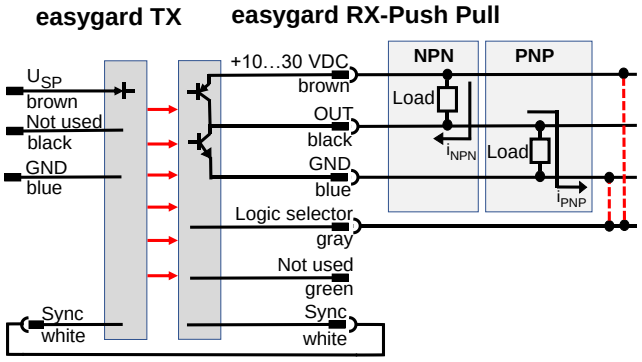


Figure 16: Schematic output diagram (push pull)

The output logic of the push pull output is set using the gray wire (red dotted in Figure 16).

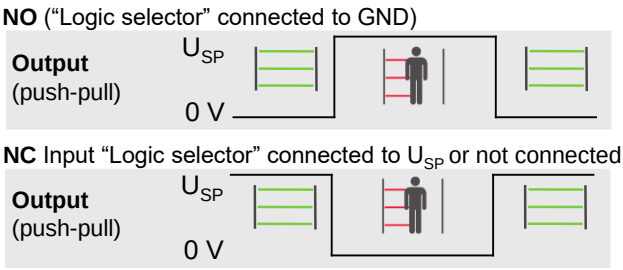


Figure 17: Configuration of the push-pull output and respective logic

Gray wire	Output Logic
Connected to GND (0V)	Push-Pull LO
Connected to USP or not connected	Push-Pull DO

Table 5: Push pull output logic

5.1.3 Solid state relay

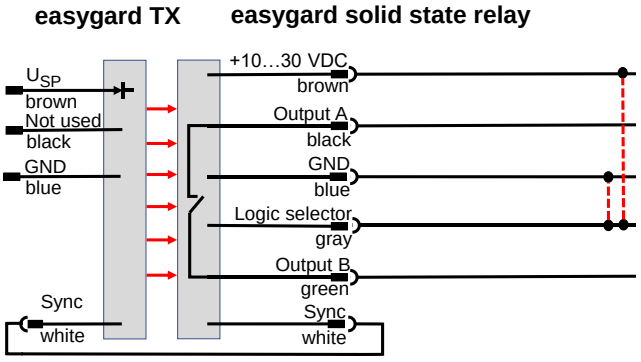


Figure 18: Solid State relay output

Important:
- The Output A and Output B are interchangeable.
- Any unconnected (n.c.) wires must be separated and isolated.

	Value
Voltage pin to GND	-30…+30 V
Voltage between pins	-50…+50 V
Current	< ±150 mA

Table 6: Output A and B (relay)

Based on the solid state technology a voltage drop of approx. up to 2V appears across the solid state output. The timing of the output is equal to that given in

With the help of the logic selector, the output signal can be configured according to the controller requirements for “normally open” or “normally closed” operation.

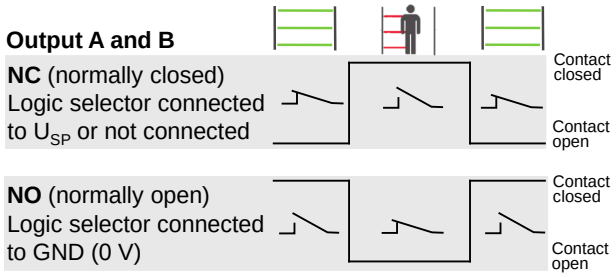


Figure 19: Logic selector

5.2 Connection to a power converter

The easygard100 light curtain can be connected to a CEDES power converter (e.g. CEDES SPS-2D, part no. 112 199; Figure 20).

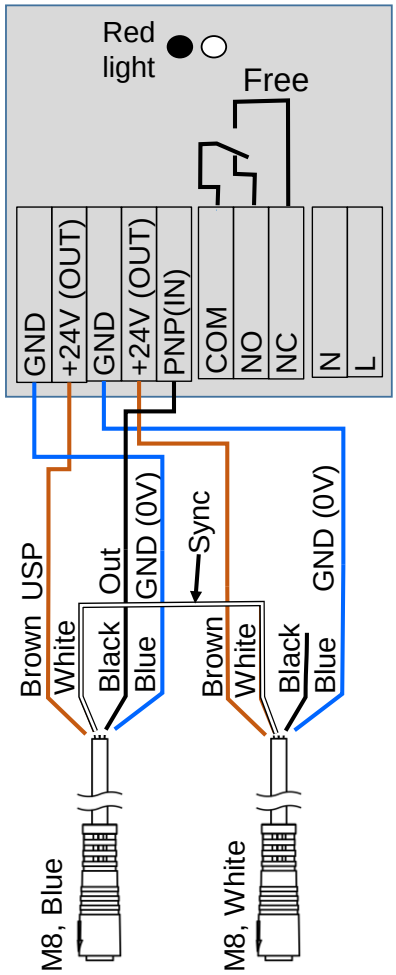


Figure 20: Electrical connection to a CEDES power converter (for overview see Figure 11)

5.3 Power-up

After installation (chapter 4):
1. Switch on mains and power-up the elevator control unit. The LED on the receiver edge blinks during the start-up phase.
2. Check the LED on both edges (power, status).
3. Test if the system is working correctly by interrupting the easygard100 light curtain:

- For EN 81-20: use a none transparent test object with a diameter stated in the code: Ø50mm. The easygard100 light curtain must signal object detected at all times during this test (from the bottom to the top of the protective field).

6 LED status description

There is one indicator LED at the transmitter and two indicator LEDs at the receiver (for the positions of the indicator see Figure 22)

6.1 Transmitter edge (Tx)

Power LED	Sensor status
● Red ON	Power OK
○ Red OFF	No power or edge is defective (see Chapter 7)

Table 7: Power LED description transmitter edge

6.2 Receiver edge (Rx)

Power LED	Sensor Status
● Red ON	Power OK
○ OFF	No power or edge is defective (see Chapter 7)

Table 8: Power LED description Receiver edge

Status LED	Sensor Status
○ OFF	Detection field free
● Red ON	Detection field interrupted

Table 9: Status LED description Receiver edge

7 Troubleshooting

Tx PWR LED	Rx PWR LED	Rx STS LED	Action
OFF	OFF	OFF	► Check electrical connections. ► Check supply voltage of the door controller. ► Restart the system
OFF	Red ON	Red ON	► Check the power supply and the connection of the transmitter (TX) cable (white M8 connector).
Red ON	OFF	OFF	► Check the power supply and the connection of the transmitter (RX) cable (blue M8 connector).
Red ON	Red ON	Red OFF	► Normal operation (no action required)
Red ON	Red ON	Red ON	► Check if synchronization cables (white wires of Rx and Tx are connected together) ► Check alignment or remove object ► Check if front windows are clean ► Check power supply ► Check connections
Red ON		Red ON/ OFF sporadic blinking	► Make sure the safeguarded area is clear of interruption. ► Clean the elements. ► Make sure that the cables and edges are located away from sources of electromagnetic interference ► Make sure that no other infrared light sources or ambient light sources are nearby or facing the receiver. ► Ensure that the emitter and receiver are correctly aligned and remain so during door closure (e.g. that vibrations do not cause edges to become misaligned). ► Measure the U_{SP} voltage. ► Restart the system.

Table 10: LED description easygard100 Light Curtain

Important:
If a problem persists, please contact your local CEDES representative. Visit www.cedes.com for contact data.

8 Maintenance

Although the easygard100 Light Curtain does not need regular maintenance, a periodic functional check is strongly recommended:

- ► Make sure the optical windows are clear of dirt and dust. If necessary, clean the front surface with a soft towel.
- ► Make sure the edges are securely fastened.
- ► Check the mounting position, cable routing and connection of the sensor.
- ► Check the detection behavior of the easygard100 light curtain according to the requirements of local regulations. (For EN 81-20: see chapter 5.3]

NOTICE
Damage to the optical windows

- ► Never use any solvents, cleaners or mechanically abrasive towels or high-pressure water to clean the sensor.
- ► Avoid scratching the optical windows while cleaning.

9 Product label

Each easygard100 light curtain edge is labeled with a product label. The label is attached on the side of the profile on each emitter as well as on each receiver edge.

Figure 21: Product label easygard100 light curtain

The label includes information according to Table 11:

1xx xxx	Part number existing of 6 numbers with space after the third
easygard100 Tx-2000-36	Description of the easygard100 edge (acc. to type description chapter 10). 2000 refers to the profile length
Lot number	Manufacturing Date (210504), manufacturing job number (12345678), employee number responsible for final test (01234), and incremental counter (000018) build the lot number.
HW / SW Index	Increasing digits with the following meaning: **1.xx**: major changes, e.g. additional functionality **x.0x**: error correction, bug fix, new compilation, no additional functionality **x.x0**: 'cosmetic' update, no functional influence
2D Bar code	Part number and Lot number

Table 11: Label information

10 Product type description

	Product line	easygard
A	Series	«1» - default
B	Type	«0» - default
C	Profile cross section	«0» - standard (Table 15) «1» - Lug profile Type A «2» - Lug profile Type B «3» - Box profile
D	Connector	«C» - Connector M8 with pig tail
E	Output	«» - Transmitter «P» - PNP *«N» - NPN* *«U» - Push pull* *«R» - Solid state relay*
F	Output logic	«» - Transmitter Rx & System in case of PNP or NPN output: *«L» - Light ON* *«D» - Dark ON* *(see* Figure 15*)*
G	Type	«SY» - System «Rx» - Receiver «Tx» - Transmitter
-		
H	Stick length	«2000» - 2'000 mm length
-		
I	Element number	«36» - 36 Elements «32» - 32 Elements

Table 12: Product type description

The easygard light curtain product line is offered in various profile cross-sections (C). The exact dimensions can be found in the respective data sheet. The profile cross-section has no influence on the other technical data.

Product line	**A**	**B**	**C**	**D**	**E**	**F**		**G**	**-**	**H**	**-**	**I**	
easygard	1	0	0	C	P	D		SY	-	2000	-	36	System, with pig tail, PNP output, dark ON logic
easygard	1	0	0	C	R			SY	-	2000	-	36	System, with pig tail, Solid State-Relay output
easygard	1	0	0	C	U			SY	-	2000	-	36	System, with pig tail, Push-pull output

Table 13: Example for product type description

Example:
easygard100CPD SY-2000-36

11 Technical Data

11.1 Optical

Attribute	Value	
No. optical elements	32	36
Max. no. of beams	154	174
Protection height [mm]	1’829	1’680
Operating range	0.0… 3 m	
Wavelength	Infrared 850 nm	

Table 14: Optical data

11.2 Mechanical

Attribute	Value
Dimensions (w x h x l)	11 x 24.5 x 2’000 mm
Housing material	Aluminum, black powder coated
Weight (pair)	1’100 g

Table 15: Mechanical data

11.3 Environmental

Attribute	Value
Enclosure rating	IP54
Temperature range (operation)	-20°C … 60°C
Temperature range (storage)	-40°C … 75°C
Max. ambient light	100’000 Lux

Table 16: Environmental data

11.4 Electrical

Attribute	Value
Supply voltage U_{SP}	10 … 30 VDC
Typical current consumption at 24 VDC (pair)	PNP: < 45 mA (without load) NPN: < 50 mA (without load) Push-pull or Solid state relay: < 55 mA
Max inrush current per edge	< 5 A (< 200 µs)
Output type	PNP, NPN, Push pull or Solid state relay
Output logic PNP and NPN: Push pull and Solid state relay:	 LO or DO Selectable with logic selector input
Max. output load	100 mA, 100 nF
Output HIGH	> U_{SP} – 2 VDC
Output LOW	< 2 VDC
Typical power up time	< 300 ms (36 elements)
Typical response time	< 100 ms (36 elements)
Typical release time	< 350 ms (36 elements)
1 LED indicator Tx	Red ON – Power
2 LED indicators Rx	Red ON – Power OFF – No object Red ON – Object detected

Table 17: Electrical data

11.5 Connection cable & electrical connection

Attribute	Value	
	Tx Transmitter	Rx Receiver
Length connection cable		
Without connector	3.8 m	
With connector	400 mm (pig tail) 3.3 m (Connection cable)	
Max. cable length	7 m per edge	
Cable material	PVC, black,	
Cable diameter	Ø3.5mm	
Connector	M8, Ø10 mm	
M8 Connector Color/pins PNP & NPN output	White, 4-pin	Blue, 4-pin
Wires		
AWG	26	
Brown	USP	
Blue	GND (0V)	
Black	Not used	OUT
White	Synchronization	
M8 Connector Color/pins Push pull	White, 4-pin	Blue, 6-pin
Wires		
AWG	26	
Brown	USP	
Blue	GND (0 V)	
Black	Not used	OUT
White	Synchronization	
Gray	-	Logic selector
Green	-	Not used
M8 Connector Color/pins Solid state relay	White, 4-pin	Blue, 6-pin
Wires		
AWG	26	
Brown	USP	
Blue	GND (0 V)	
Black	Not used	OUT
White	Synchronization	
Gray	-	Logic selector
Green	-	OUT B

Table 18

11.6 General

Attribute	Value
EMC emission	EN 12015:2020
EMC immunity	EN 12016:2013
Vibration	IEC 60068-2-6:2007

Shock	IEC 60068-2-27:2008
Cable durability	IEC 60227-2:2003
RoHS	2011/65/EU

CE	EN 81-20

Table 19: General data

11.7 Dimensions easygard100

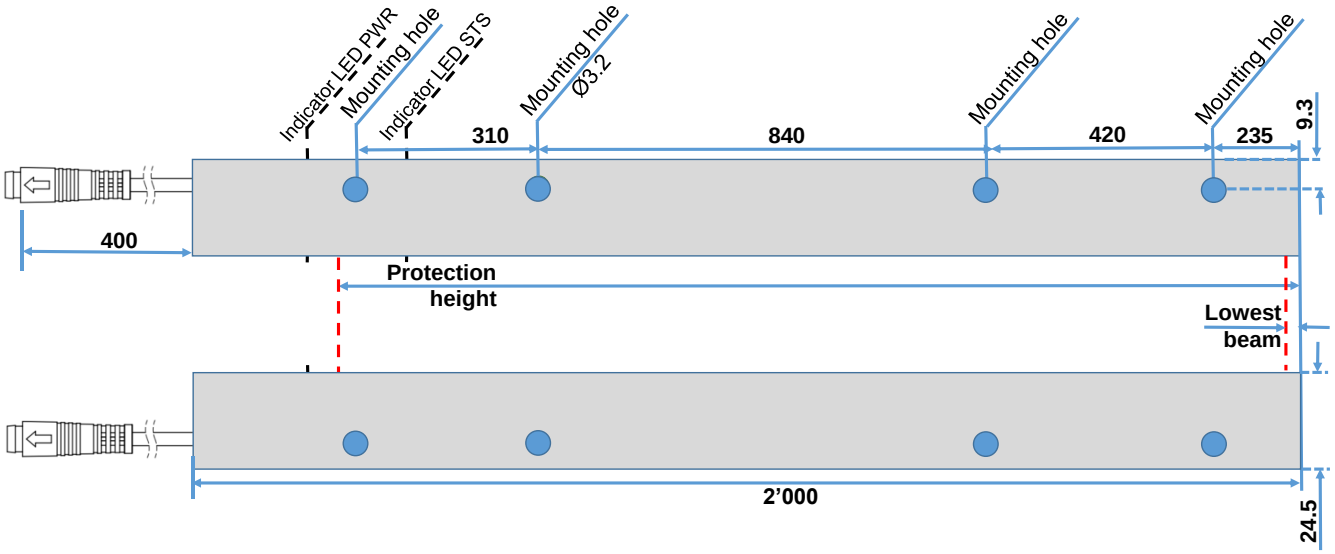


Figure 22: Dimensions easygard100 light curtain with pig tail (see Table 20 for additional data)

Numbers of elements	Position lowest beam	Protection height	Mechanical length	Resolution R	Indicator LEDL	Mounting hole 1 Ø 3.2 mm	Mounting hole 2 Ø 3.2 mm	Mounting hole 3 Ø 3.2 mm	Mounting hole 4 Ø 3.2 mm
32	16	1'857	2'000	67	Tx: 1'815 Rx:1'709/1'817	235	655	1'495	1'805
36	19	1'699	2'000	50	Tx: 1'813 Rx:1'725/1'813	235	655	1'495	1'805

Table 20: Dimensions [all in mm]

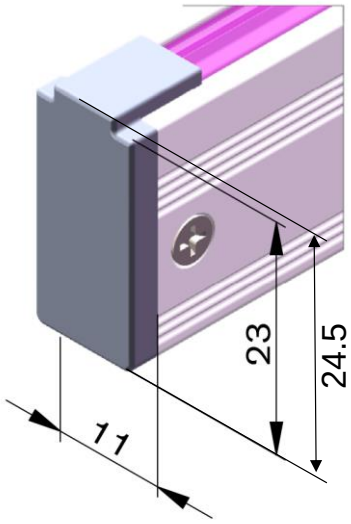


Figure 23: Cross section easygard100 light curtain

12 Disposal

An easygard100-System or components of an easygard100-System should only be replaced if a similar protection device is installed. Disposal should be done using the most up-to-date recycling technology according to local regulations and laws. There are no harmful materials used in the design and manufacture of the sensor. Traces of such dangerous materials may be found in the electronic components but not in quantities that are harmful.

Waste Electrical and Electronic Equipment (WEEE):
At the end of life, this equipment should be collected separately from any unsorted municipal waste.